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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PATEL, KAUSHIKKUMAR M	

ART UNIT	PAPER NUMBER
2188	

NOTIFICATION DATE	DELIVERY MODE
03/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@gs-iplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/706,676	ZOHAR ET AL.	
	Examiner	Art Unit	
	Kaushikkumar Patel	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-18,22,24,26,28 and 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-18,22,24,26,28 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed January 02, 2009 in response to PTO Office Action mailed September 03, 2008. The applicant's remarks and amendments to the claims and/or specification were considered with the results that follow.

2. In response to last Office Action, claims 10, 17, 18, 22 and 30 have been amended. Claims 1-9, 19-21, 23, 25, 27 and 29 have been canceled. No claims have been added. As a result, claims 10-18, 22, 24, 26, 28 and 30 remain pending in this application.

Response to Arguments

3. Applicant's arguments with respect to claim 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10-18, 22, 24, 26, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. (US 2004/0054866), Ofer et al. (US 6,209,059) and Bauman et al. (US 5,832,304).

As per claims 10 and 11, Blumenau teaches a method for processing data, comprising:

storing and recalling data in a plurality of logical units (LUs) (Blumenau: fig. 3, items 53-56; col. 2, par. [0010], controlling access to the data storage means storing and recalling data to/from the storage devices/LUs) comprising a plurality of physical media (Blumenau: fig. 1, items 28, 29, 30, 31, par. [0058]), responsively to the commands (Blumenau, par. [0060]); and

configuring in each of a plurality of ports (Blumenau, fig. 3, items 51, 52).

Blumenau fails to teach but in an analogous art, Ofer teaches port/controller being adapted to maintain a plurality of LU command queues, each of the plurality of LU command queues corresponding to a respective one of the LUs, such that upon receiving a command directed to a specific LU at a given port, the given port places the received command in the respective LU command queue (Ofer, fig. 2, items 27a1 - 27an; col. 4, lines 1-20).

The combination of Blumenau and Ofer would have been obvious to one of the ordinary skill in the art at the time the invention was made because the method of Ofer allows a logical device to be added, removed or repositioned without requiring the storage system to be taken off-line (Ofer, abstract).

Thus, Blumenau and Ofer further teaches the port converts the received commands to one or more converted commands at least some of which are directed the plurality of the physical media of the one of the LUs, and conveys the at least some converted commands to the plurality of the physical media (Blumenau, fig. 4, item 80, par. [0060]; Ofer, col. 4, lines 58-60). Blumenau and Ofer fail to teach but in an analogous art Bauman teaches conveying commands in an order determined by the respective LU command queue, so that an order of arrival of the conveyed converted commands at the specific LU complies with the order of arrival of the received command at the given port, and where in an order of arrival of concurrent commands at different ports is unrelated to an order of execution of respective converted commands of the concurrent commands (Bauman: col. 1, lines 40-50; col. 2, line 8 - col. 3, line 43; Bauman teaches parallel command queues (e.g. multiple queues similar to Ofer) and each individual queue is a FIFO and the commands are executed from the parallel queues with some type of priority (e.g. ratio), where it is readily apparent that the commands arrived at the port are placed in the respective commands queues of respective LUs and since the command queues are FIFO type, the commands from the respective queues are selected based on the order of arrival at respective ports but the commands from each port is also selected at some priority means the commands are executed at unrelated to the concurrent commands at different ports).

Thus, the combination of Blumenau, Ofer and Bauman would have been obvious to one of the ordinary skill in the art at the time the invention was made to avoid

inconsistencies in the storage system by maintaining order of commands at respective queues.

As per claim 12, Bluamenau, Ofer and Bauman teach wherein the plurality of ports comprises a first port and a second port (Blumenau, fig. 3),

wherein the first port conveys a first string of the at lest some converted commands in a first order to the plurality of the physical media (see claim 1, above, which teaches converting commands and conveying the commands in the order);

wherein the second port conveys a second string of the at lest some converted commands in a second order to the plurality of the physical media (see claim 1, above, which teaches converting commands and conveying the commands in the order);

wherein the plurality of the physical media is adapted to receive the first string and to store and recall the data in response to the first order and to receive the second string and to store and recall the data in response to the second order (as explained with respect to claim 10, above the order is necessary to avoid inconsistencies and storing and recalling data to/from physical media is inherent in the system of Blumenau, Ofer and Bauman).

As per claim 13, Blumenau teaches wherein the command comprises a request according to a small computer system interface (SCSI) protocol, and wherein the storage system is operative according to the SCSI protocol (Blumenau, pars. [0063], [0069]).

As per claim 14, Blumenau teaches wherein each of the ports comprises a respective central processing unit (CPU) which operates each of the ports substantially independently (Blumenau, fig. 4, item 76, here it is also noted that each port has its CPU and memory for performing various functions means each port operates independently).

As per claim 15, Blumenau and Ofer teach wherein the command comprised in one of one or more strings of commands (Ofer, col. 4, lines 1-20; host issues a plurality of data requests, means string of commands), each of string of commands being directed via one of the ports to a respective one of the LUs (Ofer, col. 4, lines 1-11), and comprising a coupling (fig. 1, here it is noted that coupling is inherent to couple the port to the host) which:

receives the command comprised in the one or more strings; sorts the commands according to the ports via which the commands are directed and conveys the commands to the ports to which the commands are directed (Blumenau, fig. 4, shows a plurality of hosts are connected to the storage controller with several ports and each port is assigned LUs (fig. 3), where it is readily apparent that the commands must be sorted according to ports and as taught in claim 1, Ofer teaches placing respective commands in respective command queues, Ofer, col. 4, lines 1-20).

As per claims 16 and 17, Blumenau, Ofer and Bauman teach storage system (Blumenau/Ofer fig. 1), where the host requests the data to/from storage system (e.g. read and write command) and the port/controller converts the received logical command into physical commands (see claim 1), where it is readily apparent that the converted commands recalls the data (in case of read command) from the physical media and/or stores data received from the host into the physical media of the storage system (write command), thus satisfying the limitations of claims.

As per claim 18, Blumenau teaches wherein the plurality of physical media comprises the data (inherent) and wherein the port is adapted to track changes of the location of the data within the plurality of the physical media (Blumenau, figs. 5-10, teaches various mapping tables, which tracks the data residing in the physical media and it is inherent in the system of Blumenau that during the period of the time the data stored in the physical media changes (e.g. modified, added, deleted etc.) and thus the mapping tables of the controller (port) keeps track of the changes of the data locations).

As per claim 22, Blumenau/Bauman teaches wherein at least one of the converted commands directed to the plurality of the physical media is first sent to a fast access time memory acting as a buffer, said fast access time memory being adapted to redirect the converted command to a respective physical media (Blumenau, par. [0060], teaches cache memory, which is first accessed and if data is not stored then the request is forwarded to the physical media. Ofer, par. [0002] also teaches a cache).

As per claim 24, Blumenau teaches wherein the plurality of the physical media comprises a plurality of slow access time non-volatile physical media (Blumenau, par. [0058], optical drives, tape drives are slow access time medias).

As per claim 26, Ofer teaches wherein a particular physical media of the plurality of the physical media changes over time (Ofer, col. 5, lines 15-26).

As per claim 28, Blumenau teaches storage system providing logical units (LUNs) with RAID functionality (Blumenau, par. [0062]) where it is readily apparent that data is distributed across the plurality of physical media.

As per claim 30, Blumenau teaches a storage system with SCSI protocol (see claim 4 above), where it is readily apparent that the hosts are using SCSI commands for reading and writing data to/from storage system (physical storage media) and thus it is inherent in the system of Blumenau to determine the type of command (e.g. read, write etc.). It is also noted that the format of SCSI command requires use of a logical block address and a length of the data string, thus it is also inherent to convert the logical block address and data string into the appropriate physical command.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaushikkumar Patel whose telephone number is (571)272-5536. The examiner can normally be reached on 7.30 am - 4.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hyung S. Sough/
Supervisory Patent Examiner, Art Unit 2188
03/12/09

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/kmp/